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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/749,792	12/28/2000	Zhong-Ning (George) Cai	2207/10615	6261

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KENYON & KENYON
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WASHINGTON, DC 20005

EXAMINER

CHEN, TSE W

ART UNIT	PAPER NUMBER
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2185

DATE MAILED: 11/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/749,792

Applicant(s)

CAI, ZHONG-NING (GEORGE)

Examiner

Tse Chen

Art Unit

2185

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 April 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to because FIG.5 does not correlate with FIG.6. Specifically, there is no entry in FIG.5 that corresponds to a state transition from previous logic state of "Active" to current logic state of "Wait". However, this particular state transition is depicted in FIG.6 and disclosed in the specification. Therefore, the analysis of this application will utilize the interpretation of FIG.6 and associated descriptions. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities: (a) the description "phase-locked loop... circuit 310 intercoupled to... circuit 305" (line 3-4, page 5) does not correspond to FIG.3; (b) the sentence "As shown in FIG.6..." (line 22-24, page 10-11) is awkward with redundant reference to circuit 305 and should be rewritten as, or similarly: "As shown in FIG.6, the state machine followed by control logic 312 in frequency reduction circuit 305 in FIG.3 may proceed in either of three paths from the power down state 605."; (c) the second possible path in the active state

described (line 1-4, page 13) corresponds to FIG.6 but not to FIG.5, which supposedly cross-references with FIG.6; (d) the misuse of "e.g." (exempli gratia) instead of "i.e." (id est) in line 2 of page 4, line 9 of page 4, line 11 of page 5, line 22 of page 5, line 12 of page 6, line 6 of page 7, line 9 of page 8, line 10 of page 12, when the objective was to clarify the phrase through extension instead of example.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1 – 4, 7 – 9, and 11 – 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Georgiou et al, US Patent No. 5,940,785, hereinafter referred to as Georgiou.

6. As per claim 1, Georgiou taught the invention comprising:

a sensor [119, fig. 1]; and

a circuit, responsive to the measured thermal characteristic satisfying a predetermined threshold [col. 4, lines 26 – 33] for reducing the clock frequency of the processor [col. 3, lines 60 – 64, col. 4, 35 – 37, 48 – 50].

7. As per claim 2, Georgiou taught the thermal characteristic which includes temperature and rate of temperature change [col. 4, lines 26 – 33].

8. As per claim 3, Georgiou taught a frequency generator and a logic circuit [fig. 4, col. 8, line 42 – 66].
9. As per claim 4, Georgiou reduces the clock frequency by less than fifty percent [col. 8, lines 48 – 49].
10. As per claim 6, Georgiou would slow down the processor when it runs too hot thereby allowing the processor, inherently, to run at a higher operating temperature.
11. As per claims 7 – 9 and 11, Georgiou taught the claimed apparatus. Therefore, Georgiou taught the method in operating the apparatus.
12. As per claim 12, Georgiou taught the steps of:
 - entering a first state [normal operating state with normal clock frequency] from a second state [overheat state] in response to a measured thermal characteristic of a processor with a clock frequency failing to satisfy a first predetermined threshold [threshold temperature 230 which indicates the processor is overheating]¹ ;
 - remaining in the first state in response to a measured thermal characteristic of the processor failing to satisfy the first pre-determined threshold [the processor remain in the normal operating state when its temperature fails to rise above the threshold temperature]; and
 - entering the second state from the first state in response to a measured thermal characteristic of the processor satisfying the first predetermined threshold [the

¹ After the processor enters into a overheating state, the processor's clock frequency will be reduced until the processor is cooling off. Thereafter, the processor returns to its normal operating state, col. 9, lines 22 - 25.

processor enters the overheating state when the heat sensor indicates the temperature is above the threshold temperature].

13. As per claims 13 – 17, Georgiou taught the usage of temperature and rate of temperature change of the predetermined thresholds [col. 4, lines 30 – 34].

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Georgiou [US Patent No. 5,940,785] in view of Herbert [US Patent No 5,798,667].

Georgiou employed a clock divider and multiplexer to reduce the clock rate [col. 8, lines 55 – 66]. Georgiou failed to teach a separate logic to remove a pre-determined number of transitions from the clock signal.

Herbert disclosed a method and apparatus to reduce power dissipation in an integrated circuit device via clock-rate control. One of the proposed setup is shown in FIG.11 that produces an output clock with removed-transitions [71, FIG.10]. The number of pre-determined transitions to remove can be configured according to designer preference (column 9, lines 41-46). It would have been obvious to one of ordinary skill in the art to combine the teachings of Georgiou and Herbert to reduce the

frequency of the clock via the method of removing the number of pre-determined transitions according to design choice.

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

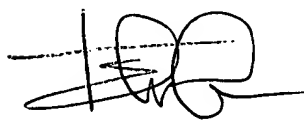
a. Hetherington et. al., US Patent No 5978864, disclosed system and method for thermal overload detection and prevention for an integrated circuit processor.

b. Merchant et. al., IEEE Transactions on Computers; VOL.45; No.7; Pages 793-801, disclosed the control mechanism for a variable speed processor.


17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tse Chen whose telephone number is (703) 305-8580. The examiner can normally be reached on Monday - Friday 9AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Lee can be reached on (703) 305-9717. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.



Tse Chen
November 3, 2003



THOMAS LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100